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March 21, 1985

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Dresden Station Units 2 and 3
Mobile Low-Level Radioactive
Waste Volume Reduction System
NRC Docket Nos. 50-237 and 50-249

Reference (a): B. Rybak letter to H. R. Denton
dated January 3, 1985.

Dear Mr. Denton:

The referenced letter submitted our revised SER on the use of a mobile low-level radioactive waste volume reduction system at Dresden Station. Several additional questions were informally received in the area of operator qualification and classification of the waste ash. Our response is contained in Attachment A.

Other questions were raised on values contained in the various tables in the referenced SER. We have reviewed those tables, made corrections and resubmitted them in Attachment B. This response should close all remaining open items in your review of the SER.

If you have any additional questions regarding this matter, please contact this office.

One signed original and forty (40) copies of this letter is enclosed for your use.

Very truly yours,

B. Rybak

B. Rybak
Nuclear Licensing Administrator

lm

cc: R. Gilbert - NRR (2 copies)
NRC Resident Inspector - Dresden

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Attachments

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ATTACHMENT A

MVRS FOREMAN QUALIFICATIONS

The foreman who supervises the operation of the MVRS will be an employee of AECC.

The foreman should have a minimum of 5 years experience in the nuclear power field. He should have knowledge and experience in the operation of equipment having multiple flowstream processes, in radioactive waste management, and in radiation protection practices.

He should have a thorough knowledge of the construction and operation of the MVRS, together with the ability to diagnose and cure problems as may arise during operation.

The foreman will be available, but not necessarily on-site, during all operation of the MVRS.

MVRS OPERATOR QUALIFICATIONS

Operators for the MVRS will be supplied by AECC, either as AECC employees or as employees of a sub-contractor to AECC.

The operators should have 3-5 years of experience in operating equipment having multiple flowstream processes. Previous work positions that would provide the desired work experience include, for example, the following:

Chemical plant operator
Nuclear Navy mechanical, electrical, or electronic training
Nuclear power plant "B" operator
Incinerator operator
Gas fired boiler operator

AECC will provide initial training in the operation of the MVRS in California, and experience will be gained during the "cold burn" tests as conducted before the equipment is transported to the Dresden site.

Training will also include standard radiological work practices such as the use of protective clothing, respirators, exposure minimization, and contamination control.

Site specific training will be given at Dresden as is given to all contractor's employees.

CLASSIFICATION OF ASH FOR DISPOSAL

The ash resulting from the operation of the MVRS will be agglomerated as described in the Topical Report. It will be "Class A" waste, unstabilized, and as such will be packaged for disposal in "strong tight containers".

Tests were conducted to determine the optimum ratio of water to ash/salt. In the range of 85-150 ml of water per liter of ash/salt, the product exits the agglomerator in a dense granular form. The tests also investigated the impact on the end product if the amount of moisture is greater or less than the optimum. The moisture contact could be increased as high as 170 ml of water per liter of ash/salt without having free-standing water in the container. When less than 75 ml of water per liter of ash/salt is used, agglomeration is incomplete, and some fines exist. The formula to be used will be 100 ml of water per liter of ash/salt.

A complete isotopic analysis of a typical ash sample will be made, once per two years, to compare and correlate to Tables 1 and 2 in 10 CFR 61.55. Visual inspection of one drum in ten will be made to insure the absence of "free water".

ATTACHMENT B

Revised

Tables

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TABLE 1

RELATIVE EFFLUENT AND DEPOSITION FACTORS
FOR OFFSITE LOCATIONS

Description	Radius (meters)	Direction	X/Q (sec/m^3)	D/Q (m^{-2})
Maximum Annual Average X/Q	610	NE	6.695E-6	2.30E-8
Maximum Annual Average D/Q	658	NNE	6.14E-6	2.32E-8
Maximum D/Q at Meat Animal	1609	NE	1.36E-6	4.656E-9
Maximum D/Q at Milk Animal	8047	N	7.07E-8	3.51E-10
Maximum X/Q at Site Boundary - ODCM Model, 1 m/sec	593	NNW	1.45E-4	N/A
Maximum X/Q at Site Boundary - Gaussian Model, 1 m/sec	593	NNW	4.68E-4	N/A
Maximum X/Q at Site Boundary - ODCM Model, 4.4 m/sec	593	NNW	4.89E-5	N/A
Maximum X/Q at Site Boundary - Gaussian Model, 4.4 m/sec	593	NNW	1.97E-4	N/A

TABLE 2

INHALATION AND INGESTION DOSE COMMITMENTS
AT OFFSITE LOCATIONS

1. Location: Maximum Annual Average X/Q (mrem/yr)

	Age Group			
Organ	Infant	Child	Teen	Adult
Bone	0.59	0.80	0.68	0.64
Liver	0.59	0.84	0.74	0.68
Total Body	0.58	0.65	0.66	0.66
Thyroid	0.58	0.58	0.58	0.58
Kidney	0.58	0.66	0.63	0.62
Lung	0.62	0.66	0.66	0.64
GI-LLI	0.58	0.63	0.66	0.66
Skin	0.69	0.69	0.69	0.69

2. Location: Maximum Annual Average D/Q (mrem/yr)

Bone	0.59	0.81	0.68	0.65
Liver	0.59	0.85	0.75	0.69
Total Body	0.59	0.66	0.66	0.66
Thyroid	0.59	0.59	0.59	0.59
Kidney	0.59	0.67	0.64	0.62
Lung	0.62	0.66	0.66	0.64
GI-LLI	0.59	0.64	0.67	0.66
Skin	0.69	0.69	0.69	0.69

3. Location: Nearest Meat Animal (mrem/yr)

Bone	0.12	0.16	0.14	0.13
Liver	0.12	0.17	0.15	0.14
Total Body	0.12	0.13	0.13	0.14
Thyroid	0.12	0.12	0.12	0.12
Kidney	0.12	0.14	0.13	0.13
Lung	0.12	0.13	0.13	0.13
GI-LLI	0.12	0.13	0.14	0.14
Skin	0.14	0.14	0.14	0.14

TABLE 2
(Continued)

4. Location: Nearest Milk Animal (mrem/yr)

	Age Group			
Organ	Infant	Child	Teen	Adult
Bone	0.012	0.014	0.011	0.0103
Liver	0.0135	0.015	0.0128	0.0114
Total Body	0.0094	0.0105	0.0106	0.0107
Thyroid	0.0089	0.0089	0.0089	0.0089
Kidney	0.0102	0.0106	0.0102	0.0097
Lung	0.0097	0.0101	0.010	0.0096
GI-LLI	0.0092	0.0098	0.0103	0.0104
Skin	0.0105	0.0105	0.0105	0.0105

5. Location: Nearest Site Boundary at X/Q = 4.68E-4 (mrem/hr)

Bone	7.21E-9	1.09E-8	8.15E-9	5.89E-9
Liver	9.02E-9	1.25E-8	1.34E-8	9.93E-9
Total Body	1.17E-9	3.00E-9	5.92E-9	7.54E-9
Thyroid	1.65E-13	2.44E-13	2.14E-13	1.70E-13
Kidney	2.45E-9	4.13E-9	4.57E-9	3.42E-9
Lung	0.41E-7	2.20E-7	2.72E-7	1.87E-7
GI-LLI	1.13E-9	3.06E-9	8.26E-9	9.09E-9

TABLE 3

SOURCES FOR OFFSITE DIRECT RADIATION

Location	Source	Shielding Credit
Waste Preparation	3 drums DAW (21 ft^3)	Self-absorption, air
Incinerator Feed	1 drum DAW (7 ft^3)	Self-absorption, air
Incinerator	1 drum DAW + 513 lbs ash	Incinerator liner - 4" firebrick, air
Scrubbers 400 lbs ash	Self-absorption, air	
Surge Tank	100 lbs ash	Self-absorption, air
HEPA Filters	12 lbs ash	Air
HIC Loadout	2 HICs (680 lbs ash)	Self-absorption, 2" lead air

TABLE 4

BASIC SOURCE TERMS
FOR VARIOUS PROCESS MATERIALS

Nuclide	mCi/Drum DAW Feed	mCi/lb Ash	mCi/HIC	mCi in Scrubber w/400 lbs ash	mCi in Surge Tank w/100 lbs ash
Cr-51	0.378	0.05	17.0	20.	5.0
Mn-54	0.567	0.075	25.50	30.	7.5
Co-58	0.077	0.01	3.40	4.	1.0
Co-60	3.906	0.517	175.78	206.8	51.7
Zn-65	0.322	0.043	14.62	17.2	4.3
Cs-134	0.588	0.078	26.52	31.2	7.8
Cs-137	1.148	0.152	51.68	60.8	15.2

TABLE 5

MVRS GAMMA SOURCE TERMS & EXPOSURE RATES

Location	Gamma/sec. @ 0.728 MeV	Gamma/sec. @ 1.253 MeV	Dose Rate at 593 m mrem/hr	Annual Dose at 593 m mrem
Waste Preparation	3.86E8	9.03E8	6.70E-6	1,79E-2
Incineration Feed	1.29E8	3.01E8	2.24E-6	5.97E-3
Incinerator	8.88E9	2.07E10	8.96E-5	2.39E-1
Scrubber	6.48E9	1.51E10	1.12E-4	2.99E-1
Surge Tank	1.62E9	3.78E9	2.81E-5	7.48E-2
HEPA Filters	2.05E8	4.77E8	3.55E-6	9.44E-3
HIC Loadout	1.10E10	2.57E10	1.03E-5	2.75E-2
TOTAL			2.53E-4	6.74E-1